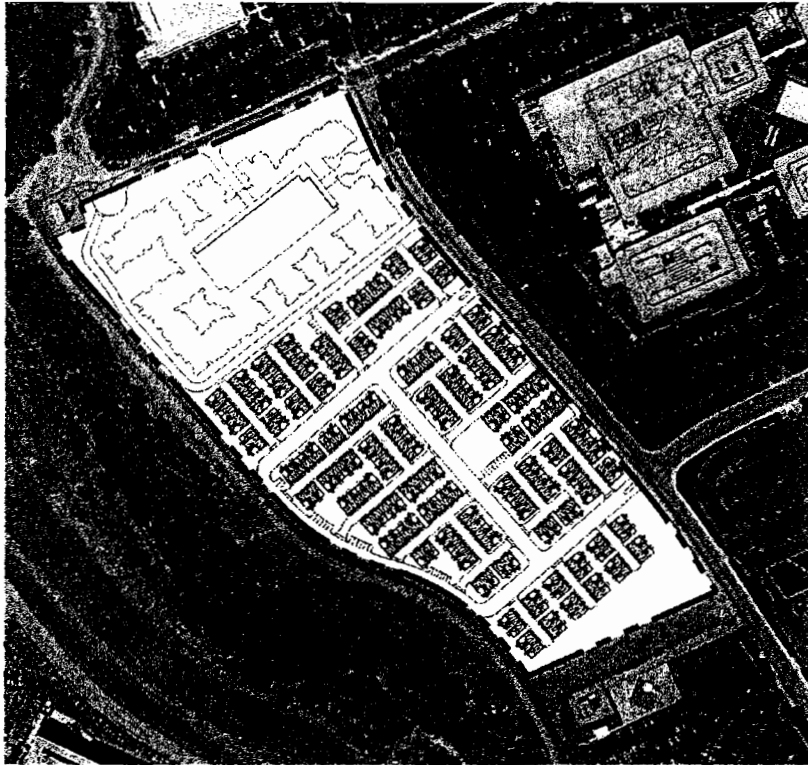


## *Appendix B*

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# STORMWATER CONTROL REPORT

## MURPHY RANCH FAIRFIELD RESIDENTIAL, LLC



For  
Stormwater C.3 Guideline Compliance Submittal  
With  
Tentative Map

March 10, 2006

Prepared By:



**Carlson, Barbee  
& Gibson, Inc.**

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## **SECTION 1**

# **C.3 STORMWATER CONTROL PLAN FOR FAIRFIELD RESIDENTIAL MURPHY RANCH**

March 10, 2006

## **Introduction**

This Stormwater Control Plan for Murphy Ranch improvements is submitted to the Department of Public Works of the City of Milpitas (City) as a recommendation on the use of permanent Best Management Practices (BMPs) on the site. Probable design storm flows and permanent BMP selection are presented in this report. BMP technical requirements are presented in the Storm water C.3 Guidebook adopted by the City of Milpitas on February 23, 2005.

The project site for the Fairfield Residential – Murphy Ranch Project is located at the southern intersection of Technology Drive and Murphy Ranch Road in the City of Milpitas, as shown in Figure 1. The improvements to the Site will include one multi-family residential apartment building with a total of 374 units that includes a multi-story parking structure, 65 multi-family residential townhome buildings, additional on-site parking, landscaping areas and a public park. The total project area is approximately 21.73 acres. Figure 2 is an aerial photo showing the project site.

The entire site is currently vacant, undeveloped land with no impervious surfaces.

Upon construction of the proposed improvements, approximately 15.45 acres (71%) of the site will be covered by impervious surface and about 6.28 acres (29%) will be covered by landscaped or pervious surfaces. Landscape areas include lawn, shrubs, trees and swales. Walkways and patios included in any landscape areas for the purpose of determining drainage sub-areas are accounted in the runoff calculations for BMP treatment by weighting the corresponding runoff coefficients.

## **On-site Conditions**

Currently stormwater runoff on the site flows overland towards Murphy Ranch Road to five existing storm drain inlets located along the eastern boundary of the project site. The existing drainage areas with treatment flows are shown in Figure 3 and the existing storm drain facilities are identified in Figure 4.

For the purpose of this Stormwater Control Plan, the site has been divided into eight principle drainage areas.

- Drainage area A, with approximately 6.08 acres, will discharge into an existing storm drain inlet located along Murphy Ranch Road.
- Drainage area B, with approximately 4.21 acres, will discharge into the existing City storm drain system within Murphy Ranch Road just north of drainage area A.
- Drainage area C, with approximately 3.86 acres, will discharge into the existing City storm drain inlet within Murphy Ranch Road.
- Drainage area D, with approximately 2.82 acres, will discharge into the existing City storm drain system within Murphy Ranch Road.
- Drainage area E, with approximately 1.35 acres, will discharge into an existing City storm drain inlet within Murphy Ranch Road.
- Drainage area F, with approximately 1.44 acres, will discharge into the existing City storm drain system within Technology Drive.
- Drainage area G, with approximately 1.95 acres, will discharge into the existing City storm drain system within Technology Drive.
- Drainage area H, with approximately 0.02 acres, will discharge into an existing City storm drain inlet within Murphy Ranch Road.

Each drainage area is further divided by surface type. Pervious and impervious surface areas are shown in Figures 3 and 5, and the corresponding land type areas are presented in Tables 1 and 2.

Proposed on-site storm drainage system improvements for the site will tie into portions of the existing storm drain system as shown in Figure 6.

#### Additional On-site Conditions:

- Soil Type: From the on-site geotechnical investigation, the subsurface soils conditions indicate the site is generally underlain by 8 to 10 feet of soft to medium stiff silt and low-plasticity clay with varying sand content.
- Groundwater Depth: From the on-site geotechnical investigation, approximate groundwater depth ranged between 10-1/2 to 14-1/2 feet deep. Groundwater levels are anticipated to fluctuate depending on seasonal variations, variations in the water level in Coyote Creek, and the amount of groundwater being pumped in the general vicinity.

### **Hydrology**

Runoff coefficients for existing and proposed on-site conditions are based on values given in the City of Milpitas Land Development Engineering Manual and are presented in Tables 1 and 2.

A rainfall intensity value of *0.2 inches per hour* is used for treatment flows based on the City of Milpitas Stormwater C.3 Guidebook. The weighted runoff coefficient was based on the percentage imperviousness of each tributary drainage area. Based on the existing on-site conditions, runoff during a treatment flow event would be 0.87 cfs. Treatment flow for the proposed on-site improvements will be 3.03 cfs. A net increase of 2.16 cfs can be expected in the rate of runoff due to a treatment flow event for the proposed on-site improvements. The Rational Method is used to calculate minimum treatment flow runoff and is presented in Tables 1 and 2 for the existing and proposed on-site conditions.

In addition, Table 3 identifies the 10-year peak runoff rates for each drainage area within the proposed site. The weighted runoff coefficients and City rainfall intensity charts were used to calculate each drainage areas peak runoff rate.

### **Recommended Permanent BMPs**

Permanent Best Management Practices (BMPs) are required for the site. Pollution sources for the site include grease, oil, litter and waste. Table 5 identifies potential pollutant source areas and the associated source control BMP. Site constraints limit the type and number of BMPs that can be included as part of the site improvements. Site constraints include limited landscape areas, grading constraints, large building foundations, walkways, patios, parking lot layout, property line boundaries and existing fronting roadways.

The recommended BMP alternatives for the project site are shown in Figure 7. These BMPs would provide a level of treatment that would meet the C.3 requirements for the additional runoff generated by the project improvements:

1. Selected landscaping areas could be used as landscape infiltration BMPs. Route pathway and patio runoff to landscape infiltration BMP, with excess flows conveyed to the on-site storm drain system.
2. A landscape swale along the north and west boundaries of the site parallel to the fire lane will be incorporated as a treatment BMP. Runoff from the drive aisle will sheet flow into the landscape swale and flows will be conveyed to a final area drain connected to the on-site storm drain system
3. Installation of a structural stormwater treatment units prior to the point of connections to public storm drain systems along Murphy Ranch Road (See Section 4 for typical structural BMP details).
4. Installation of oil-grease separators in parking structure to treat runoff that could be mixed with vehicle hydrocarbons.

BMP sizing for the landscape swale is shown in Table 3.

For proposed Drainage Area 'F':

- The minimum surface area required to treat the driveway runoff is 2,130 sf
- The proposed landscape swale has a surface area of 3,960 sf

For proposed Drainage Area 'G':

- The minimum surface area required to treat the driveway runoff is 1,300 sf
- The proposed landscape swale has a surface area of 4,360 sf

For proposed Drainage Area 'H':

- The minimum surface area required to treat the driveway runoff is 70 sf
- The proposed landscape swale has a surface area of 540 sf

Structural BMP sizing was calculated using the *flow-based* methodology described in the City of Milpitas Stormwater C.3 Guidebook.

For proposed Drainage Area 'A':

- The minimum required flow to be treated is 0.81 cfs (as shown in Table 2)
- The proposed Stormwater Treatment Unit has a treatment capacity of 1.10 cfs (as shown in Section 4)

For proposed Drainage Area 'B':

- The minimum required flow to be treated is 0.65 cfs (as shown in Table 2)
- The proposed Stormwater Treatment Unit has a treatment capacity of 0.70 cfs (as shown in Section 4)

For proposed Drainage Area 'C':

- The total minimum required flow to be treated is 0.57 cfs (as shown in Table 2)
- The proposed Stormwater Treatment Unit has a treatment capacity of 0.70 cfs (as shown in Section 4)

For proposed Drainage Area 'D':

- The total minimum required flow to be treated is 0.38 cfs (as shown in Table 2)
- The proposed Stormwater Treatment Unit has a treatment capacity of 0.70 cfs (as shown in Section 4)

For proposed Drainage Area 'E':

- The total minimum required flow to be treated is 0.22 cfs (as shown in Table 2)
- The proposed Stormwater Treatment Unit has a treatment capacity of 0.70 cfs (as shown in Section 4)

It is recommended that the structural BMP's be installed at the downstream collection point of each drainage area in order to provide the most effective method of preventing pollutants from entering the public storm drain system and meet the City C.3 stormwater requirements.

Maintenance procedures for the recommended BMPs are outlined in Section 4, BMP Maintenance Recommendations.

## **SECTION 2**



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Date: 3/10/2006  
Job No.: 1299-00

**TABLE 1. EXISTING ON-SITE FLOWS  
MURPHY RANCH**

Drainage Area ID	Land Type	Area (acres)	C	Flow (cfs)
A - Pervious Areas	Natural Earth	3.0	0.2	0.12
Total		3.0	0.2	0.12
B - Pervious Areas	Natural Earth	2.3	0.2	0.09
Total		2.3	0.2	0.09
C - Pervious Areas	Natural Earth	13.1	0.2	0.52
Total		13.1	0.2	0.52
D - Pervious Areas	Natural Earth	3.3	0.2	0.13
Total		3.3	0.2	0.13
<b>TOTAL</b>		<b>21.7</b>	<b>0.20</b>	<b>0.87</b>

Rainfall Intensity (in/hr) = 0.2  
Impervious Runoff Coefficient = 0.9  
Pervious Runoff Coefficient = 0.2

Note: Total Runoff Coefficient based on weighted average of total on-site project drainage area.



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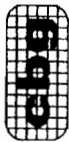
Date: 3/10/2006  
Job No.: 1299-00

**TABLE 2. PROPOSED FLOWS**  
(MINIMUM TREATED FLOWS PER CITY OF MILPITAS STORMWATER C.3 GUIDEBOOK)  
**MURPHY RANCH**

Drainage Area ID	Land Type	Area (acres)	C	Flow (cfs)
A - Impervious Areas	Roof	2.00	0.9	0.36
A - Impervious Areas	Parking/Driveway	1.64	0.9	0.30
A - Impervious Areas	Walks	0.43	0.9	0.08
A - Pervious Areas	Landscaping	2.01	0.2	0.08
Total		6.08	0.7	0.81
B - Impervious Areas	Roof	1.77	0.9	0.32
B - Impervious Areas	Parking/Driveway	1.26	0.9	0.23
B - Impervious Areas	Walks	0.40	0.9	0.07
B - Pervious Areas	Landscaping	0.78	0.2	0.03
Total		4.21	0.8	0.65
C - Impervious Areas	Roof	1.53	0.9	0.28
C - Impervious Areas	Parking/Driveway	1.12	0.9	0.20
C - Impervious Areas	Walks	0.34	0.9	0.06
C - Pervious Areas	Landscaping	0.87	0.2	0.03
Total		3.86	0.7	0.57
D - Impervious Areas	Roof	1.43	0.9	0.26
D - Impervious Areas	Parking/Driveway	0.39	0.9	0.07
D - Impervious Areas	Walks	0.06	0.9	0.01
D - Pervious Areas	Landscaping	0.94	0.2	0.04
Total		2.82	0.7	0.38
E - Impervious Areas	Roof	1.10	0.9	0.20
E - Impervious Areas	Parking/Driveway	0.08	0.9	0.01
E - Impervious Areas	Walks	0.03	0.9	0.01
E - Pervious Areas	Landscaping	0.14	0.2	0.01
Total		1.35	0.8	0.22
F - Impervious Areas	Roof	0.52	0.9	0.09
F - Impervious Areas	Parking/Driveway	0.23	0.9	0.04
F - Impervious Areas	Walks	0.18	0.9	0.03
F - Pervious Areas	Landscaping	0.51	0.2	0.02
Total		1.44	0.7	0.19
G - Impervious Areas	Roof	0.67	0.9	0.12
G - Impervious Areas	Parking/Driveway	0.14	0.9	0.03
G - Impervious Areas	Walks	0.11	0.9	0.02
G - Pervious Areas	Landscaping	1.03	0.2	0.04
Total		1.95	0.5	0.21
H - Impervious Areas	Roof	0.00	0.9	0.00
H - Impervious Areas	Parking/Driveway	0.01	0.9	0.002
H - Impervious Areas	Walks	0.01	0.9	0.002
H - Pervious Areas	Landscaping	0.00	0.2	0.00
Total		0.02	0.9	0.00
<b>TOTAL</b>		<b>21.73</b>	<b>0.70</b>	<b>3.03</b>

Rainfall Intensity (in/hr) = 0.2  
Impervious Runoff Coefficient = 0.9  
Pervious Runoff Coefficient = 0.2

Note: Total Runoff Coefficient based on weighted average of total on-site project drainage area.



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**TABLE 3. PEAK RUNOFF CALCULATION WORKSHEET**  
(PROPOSED ON-SITE DRAINAGE AREAS)  
MURPHY RANCH

Drainage Area ID	Land Type Description	Area (Acres)		Percentage Impervious (%)	Weighted Runoff Coeff. 'C'	Time of Concentration T <sub>c</sub> (min)	Rainfall Intensity 10-Year (in/hr)	Peak Runoff 10-Year (cfs)	Permanent BMP Measure
		Impervious	Pervious						
Drainage Area 'A'	South portion of site draining to Murphy Ranch Rd	4.07	2.01	67%	0.70	13	1.70	7.24	Structural BMP (Stormwater Treatment Unit)
Drainage Area 'B'	Middle portion of site draining to Murphy Ranch Rd	3.43	0.78	81%	0.80	12	1.77	5.96	Structural BMP (Stormwater Treatment Unit)
Drainage Area 'C'	Middle portion of site draining to Murphy Ranch Rd	2.99	0.87	77%	0.70	12	1.77	4.78	Structural BMP (Stormwater Treatment Unit)
Drainage Area 'D'	Middle portion of site draining to Murphy Ranch Rd	1.88	0.94	67%	0.70	12	1.77	3.49	Structural BMP (Stormwater Treatment Unit)
Drainage Area 'E'	NE portion of site draining to Murphy Ranch Rd	1.21	0.14	90%	0.80	9	2.07	2.24	Bio-Filtration Swale
Drainage Area 'F'	NW portion of site draining to Technology Drive	0.93	0.51	65%	0.70	8	2.21	2.23	Structural BMP (Stormwater Treatment Unit)
Drainage Area 'G'	North portion of site draining to Technology Drive	0.92	1.03	47%	0.50	7	2.37	2.31	Bio-Filtration Swale
Drainage Area 'H'	North portion of site draining to Murphy Ranch Rd	0.02	0.00	100%	0.90	5	2.84	0.05	Bio-Filtration Swale

Structural BMP Notes:

1. All Stormwater Treatment Units will have the appropriate capacity to meet the minimum required treat flows from each Drainage Area (See Table 2).
2. All Stormwater Treatment Units will be installed at downstream point of each Drainage Area prior to discharging into the public storm drain system (See Figure 7).



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**TABLE 4. BMP SIZING - LANDSCAPE SWALE  
MURPHY RANCH**

Drainage Area ID	Land Type	Area (sf)	BMP Type	Sizing Factor	Minimum Surface Area Required (sf)	Surface Area as Designed (sf)
D	Parking/Driveway (Pavement)	16,990	Landscape Swale	0.2125	3,610	1,290
F	Parking/Driveway (Pavement)	10,020	Landscape Swale	0.2125	2,130	3,960
G	Parking/Driveway (Pavement)	6,100	Landscape Swale	0.2125	1,300	4,360
H	Parking/Driveway (Pavement)	340	Landscape Swale	0.2125	70	540

**Sizing Factor:**

Landscape Swale: 0.2125 \*

\* The equivalent sizing factor of 0.17 assumes that the treatment BMP can infiltrate runoff from 100% impervious area at 0.17 inches per hour intensity through soil or sand with a minimum infiltration rate of 1 inches per hour. ( $0.17/0.8 = 0.2125$ )

The soil material to be used within the swale area shall have a minimum infiltration rate of 0.8 inches per hour to meet the minimum treatment criteria above.



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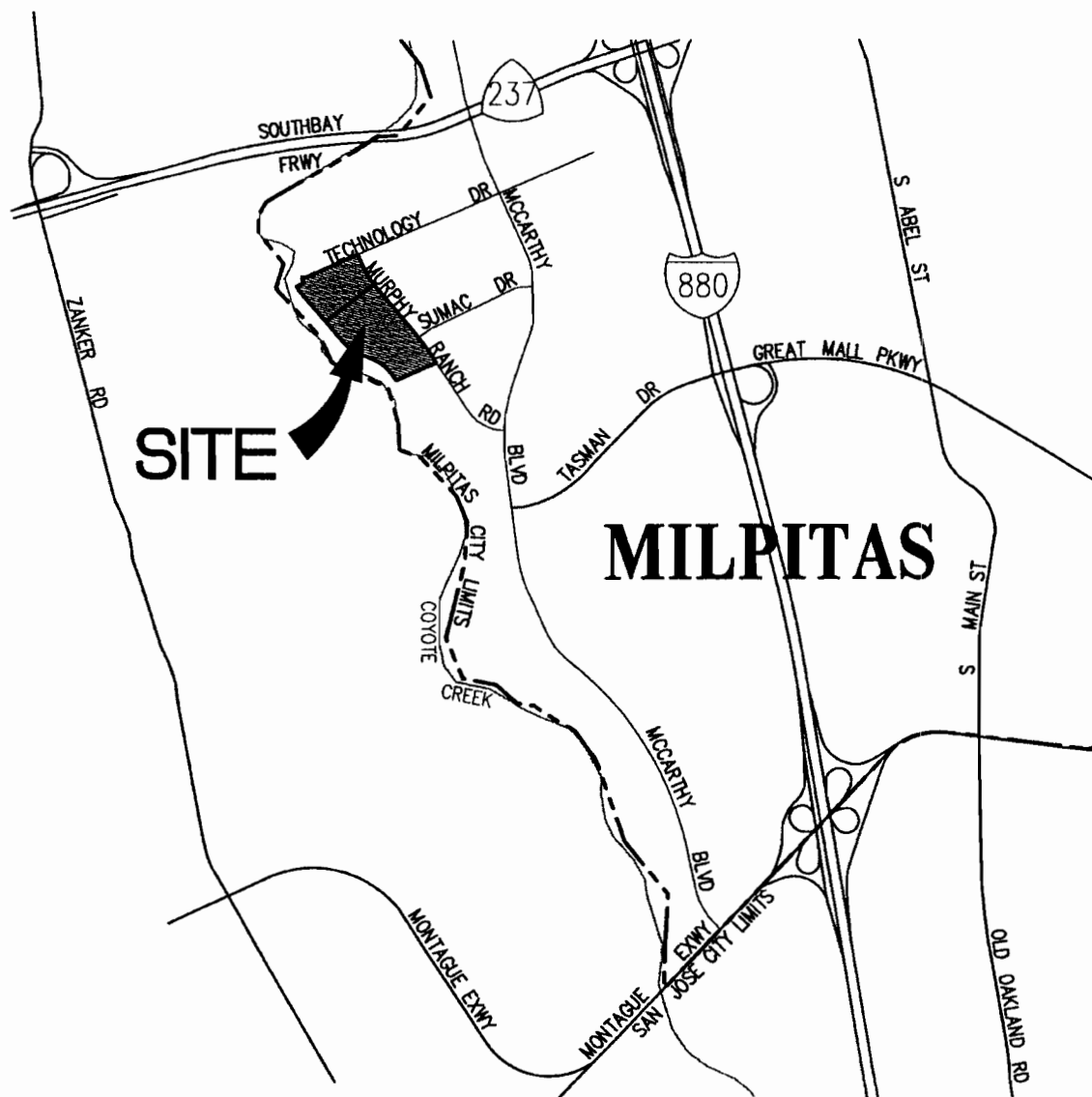
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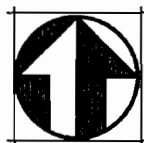
**TABLE 5. POTENTIAL SOURCES OF RUNOFF POLLUTANTS  
MURPHY RANCH**

Potential Source	Permanent Source Control BMPs
Parking Lots and Driveways	Landscape Bio-Filtration Swale
Illegal Dumping	Onsite inlets will be imprinted with "NO DUMPING - FLOW TO CREEK."
Refuse Areas	All refuse into bins.
Litter Waste	Provide trash bins.
Landscape Maintenance	Landscape maintenance contractor to submit to O&M procedures to owner.

## **SECTION 3**



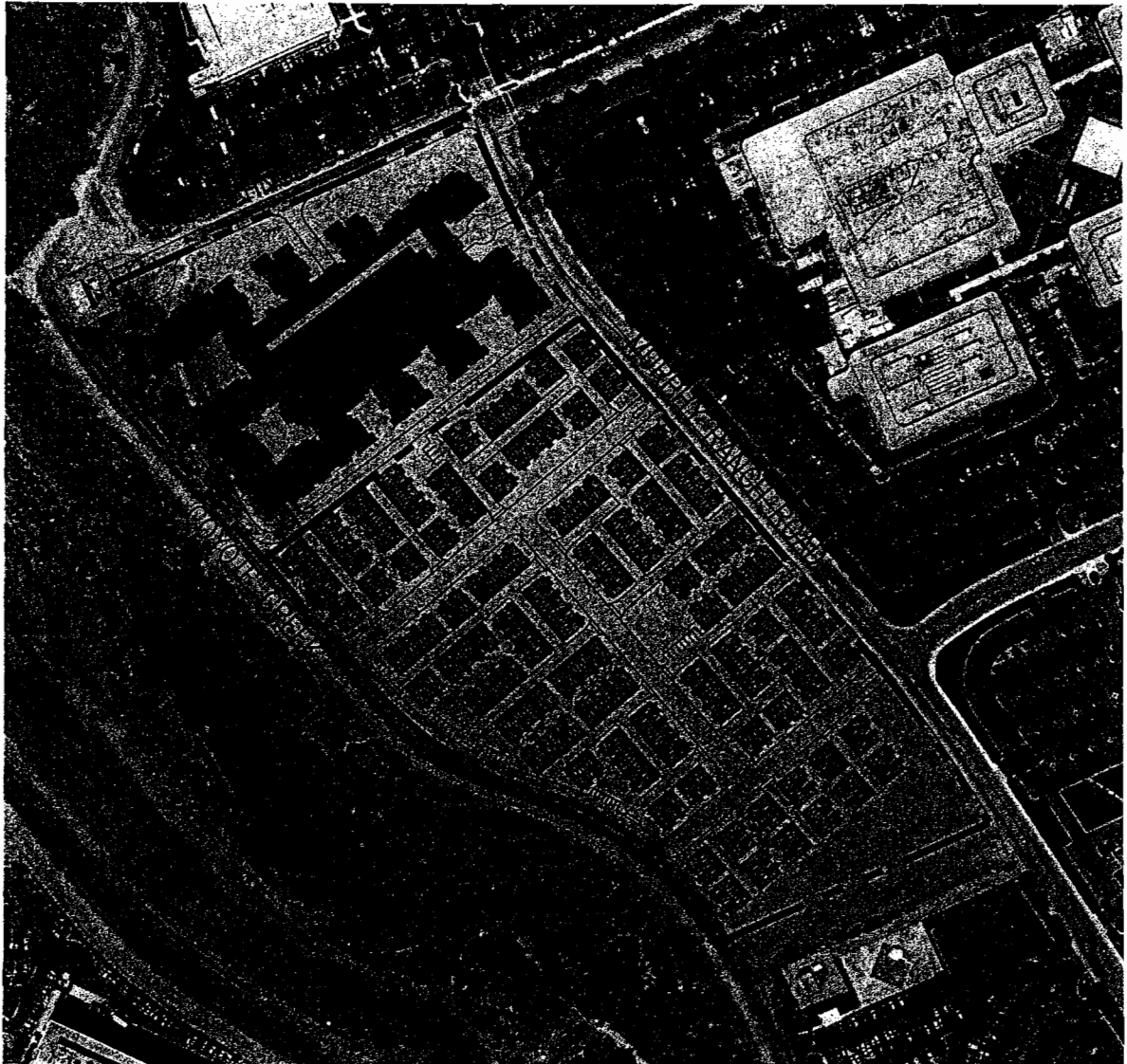
**FIGURE 1**  
**VICINITY MAP**  
**MURPHY RANCH**  
**SANTA CLARA COUNTY, CALIFORNIA**  
 DATE: MARCH 2006



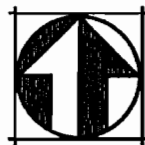
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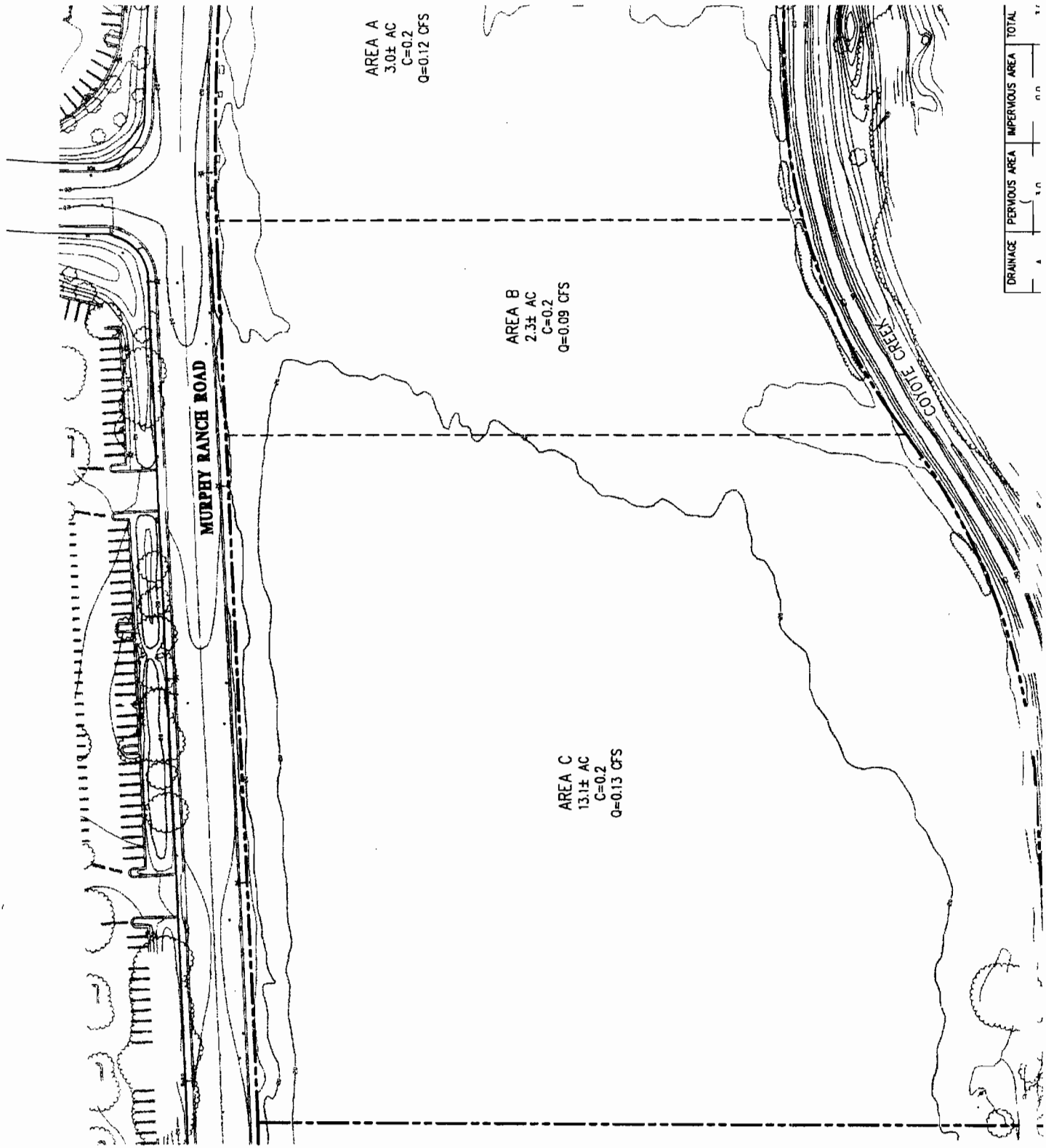
**FIGURE 2**  
**AERIAL PHOTO EXHIBIT**  
**MURPHY RANCH**  
**SANTA CLARA COUNTY, CALIFORNIA**  
DATE: MARCH 2006



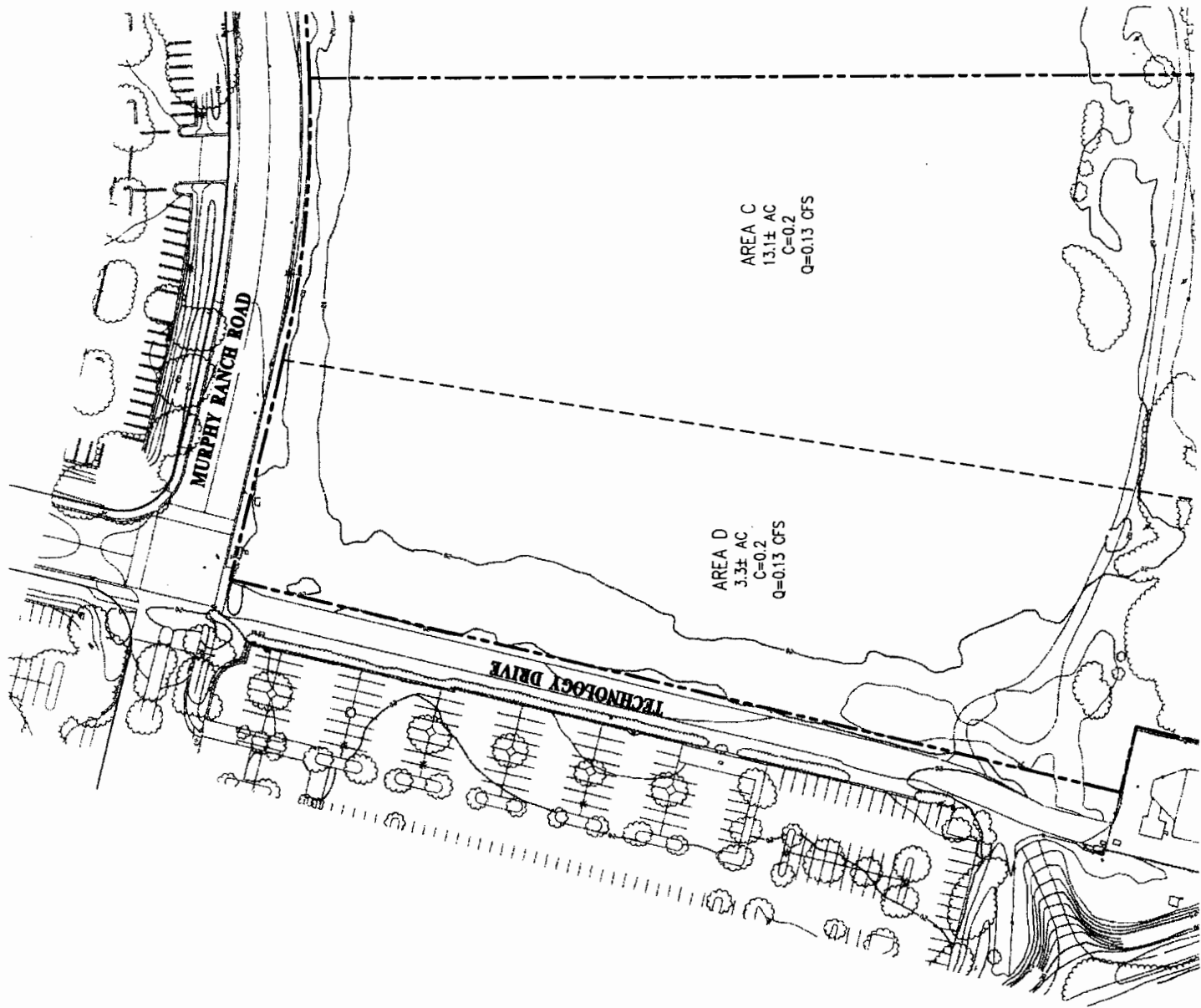
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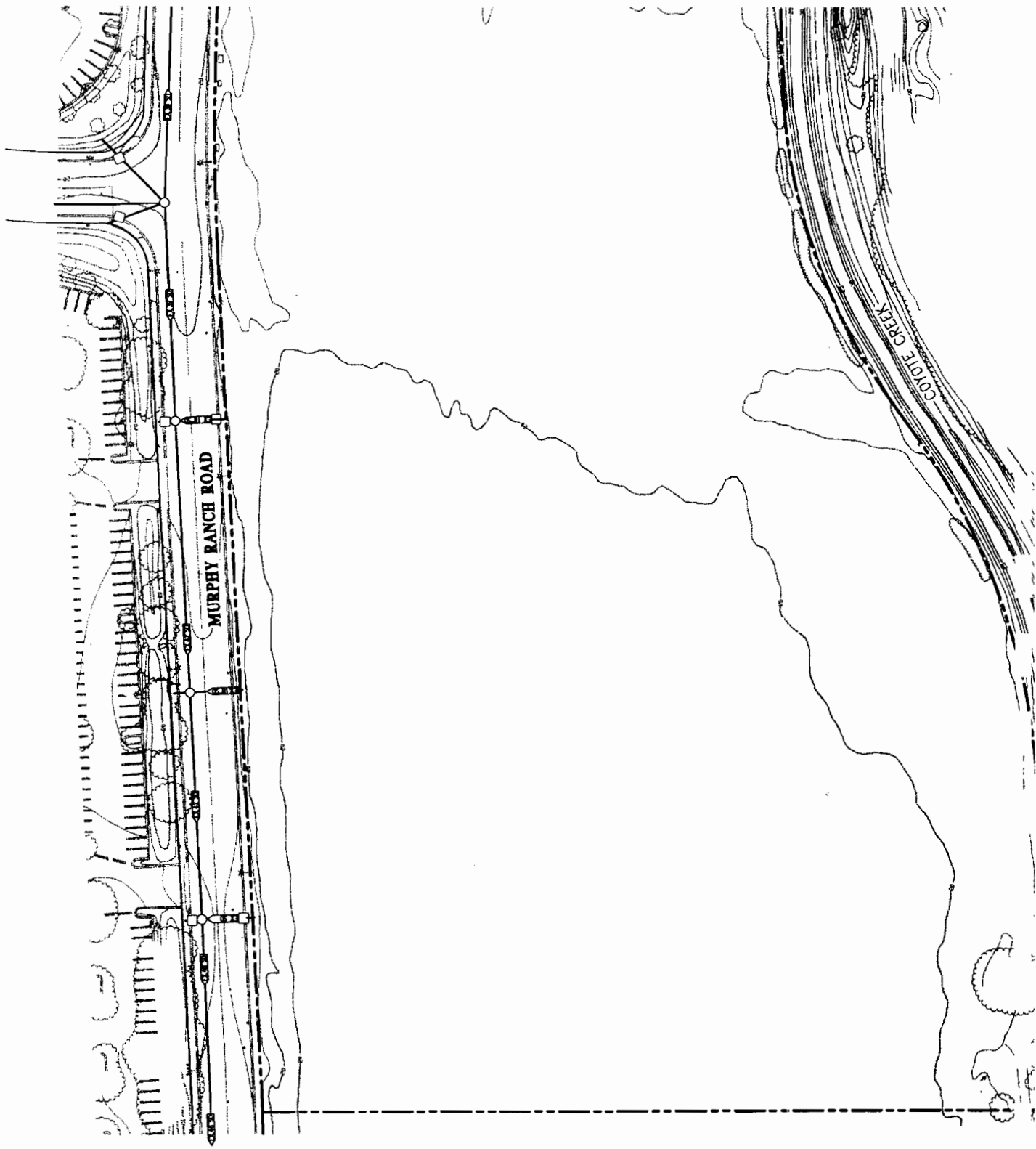
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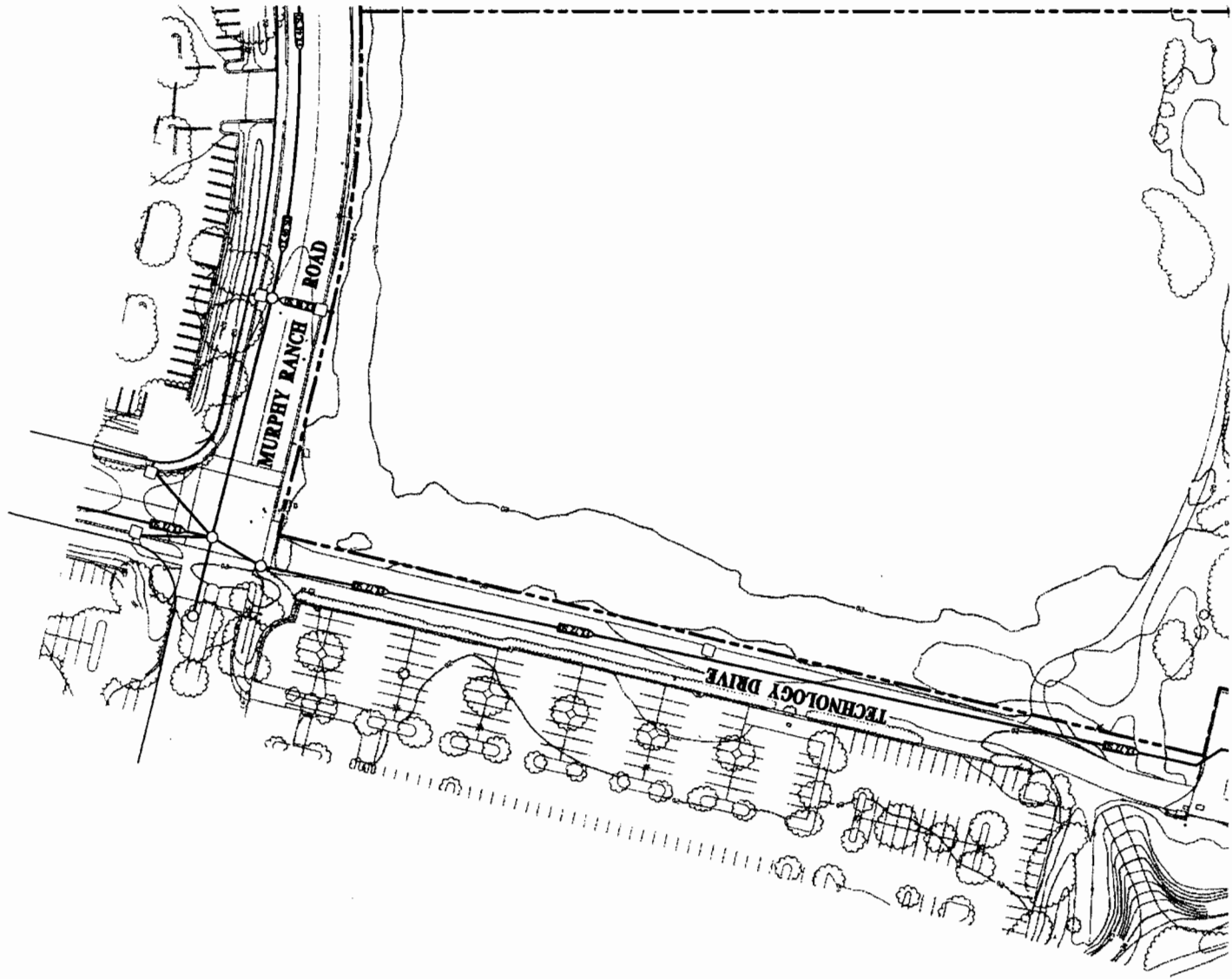
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DRAINAGE	PERVIOUS AREA	IMPERVIOUS AREA	TOTAL
A	1.0	0.0	1.0
B	1.0	0.0	1.0
C	1.0	0.0	1.0

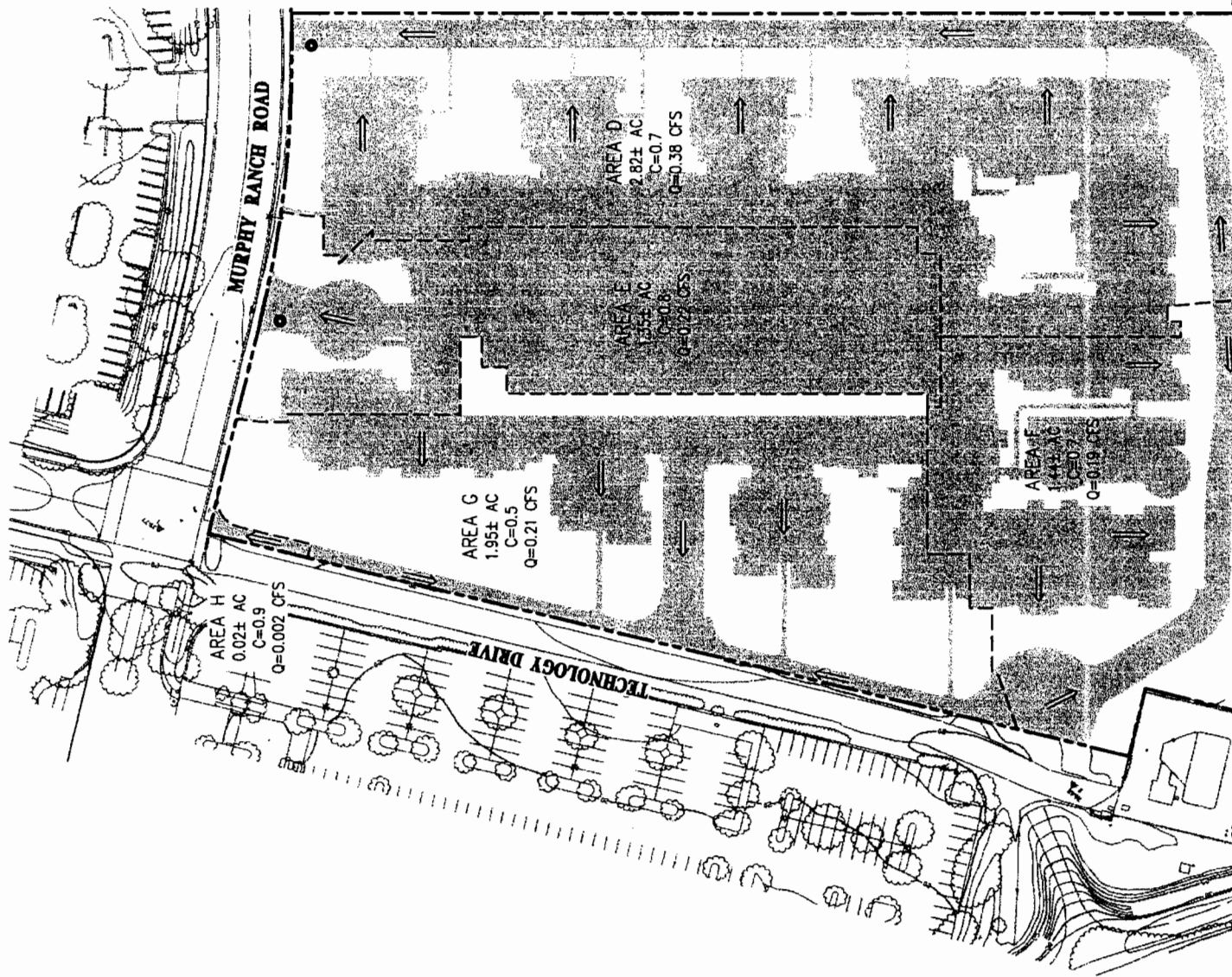


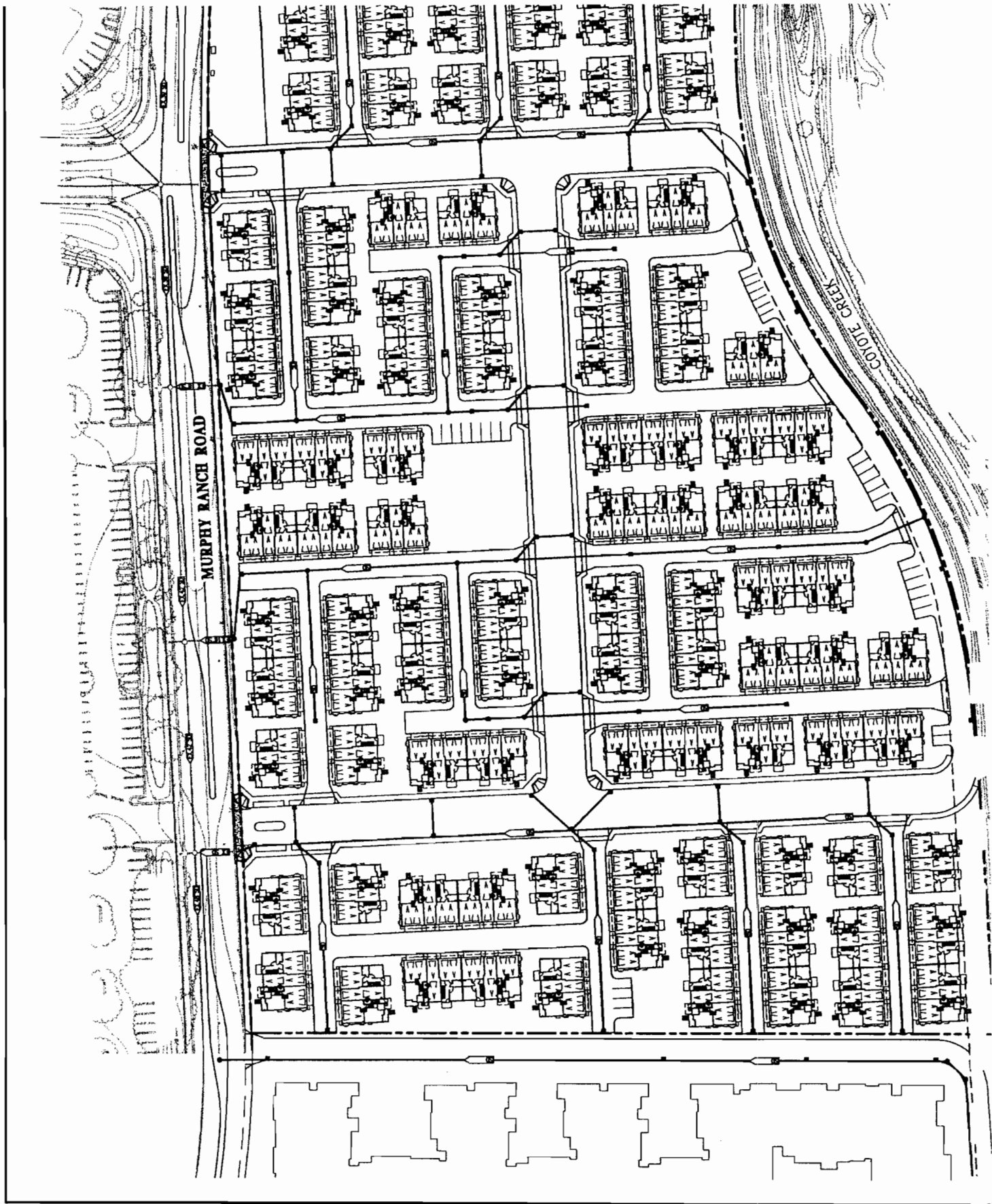


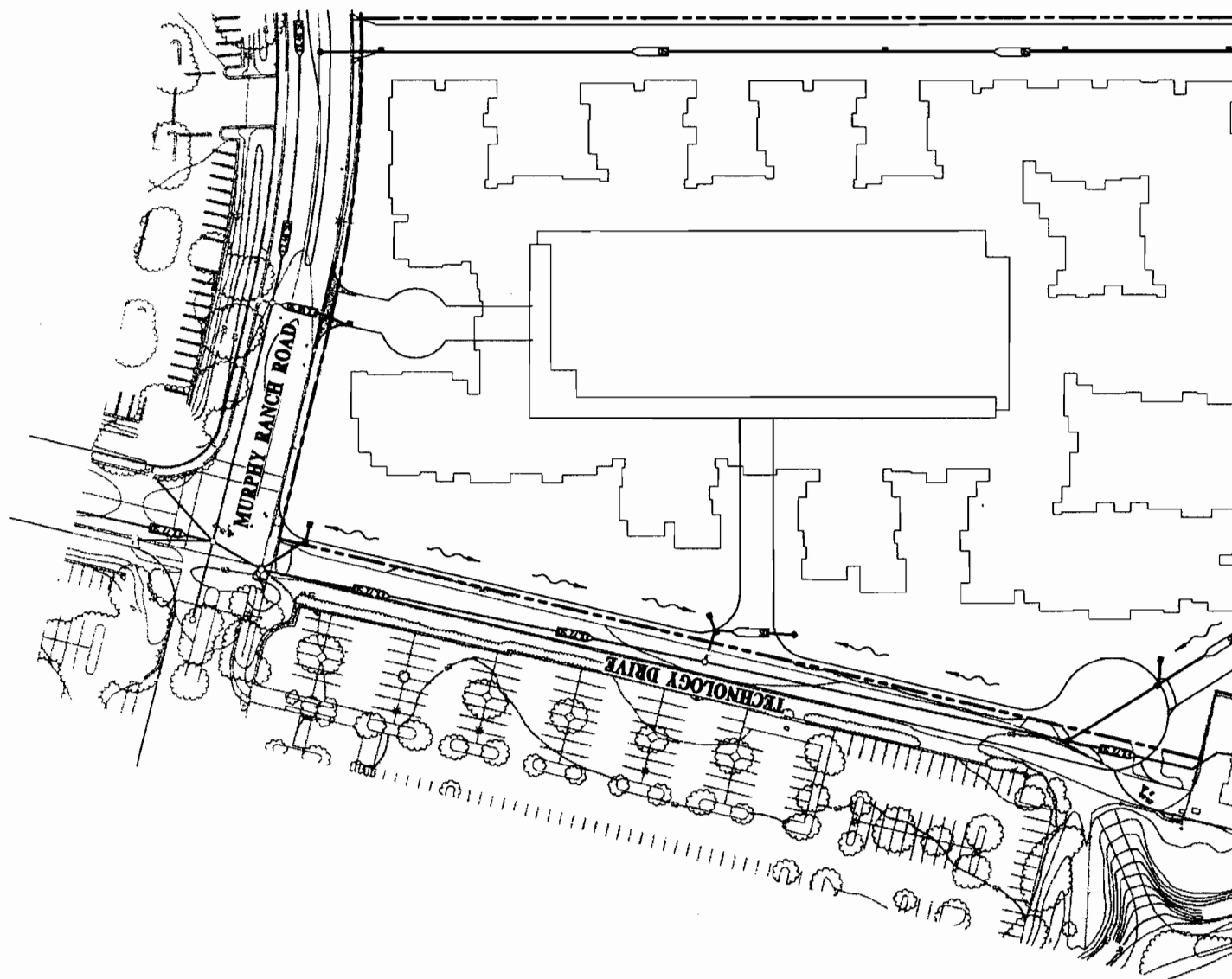


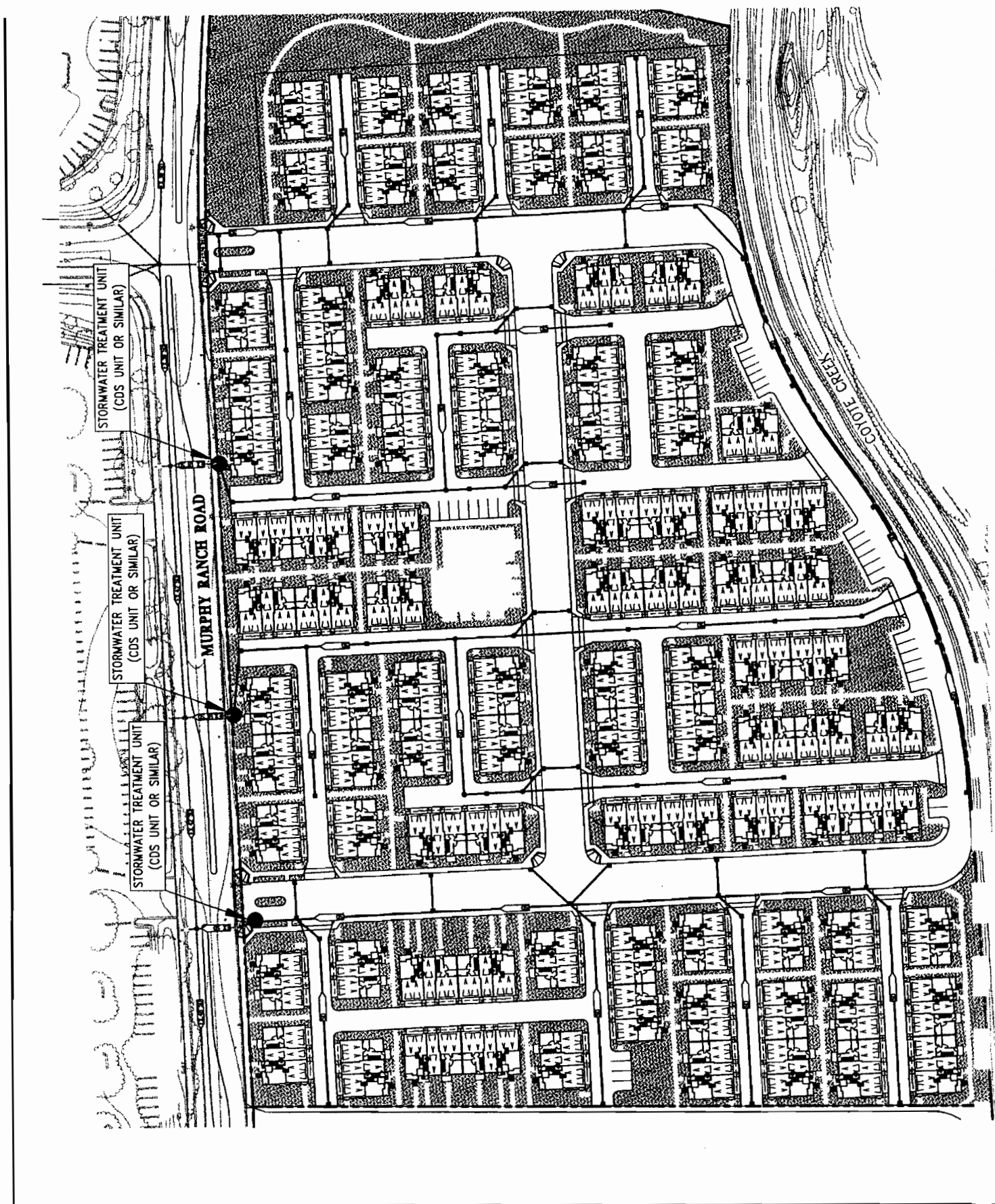


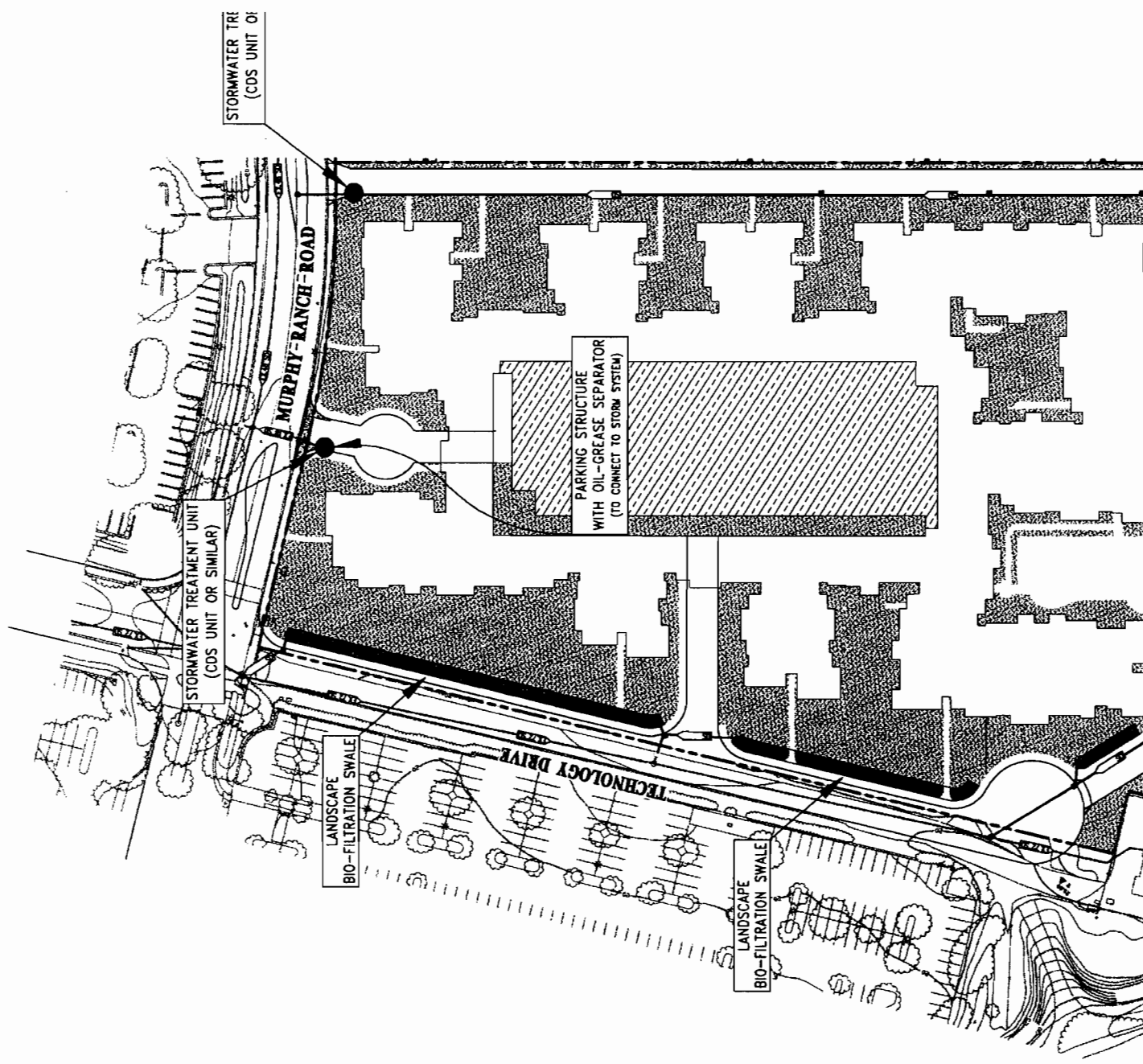
DRAINAGE AREA	PERVIOUS AREA (AC±)	IMPERVIOUS AREA (AC±)	TOTAL AREA (AC±)
A	2.01	4.07	6.08





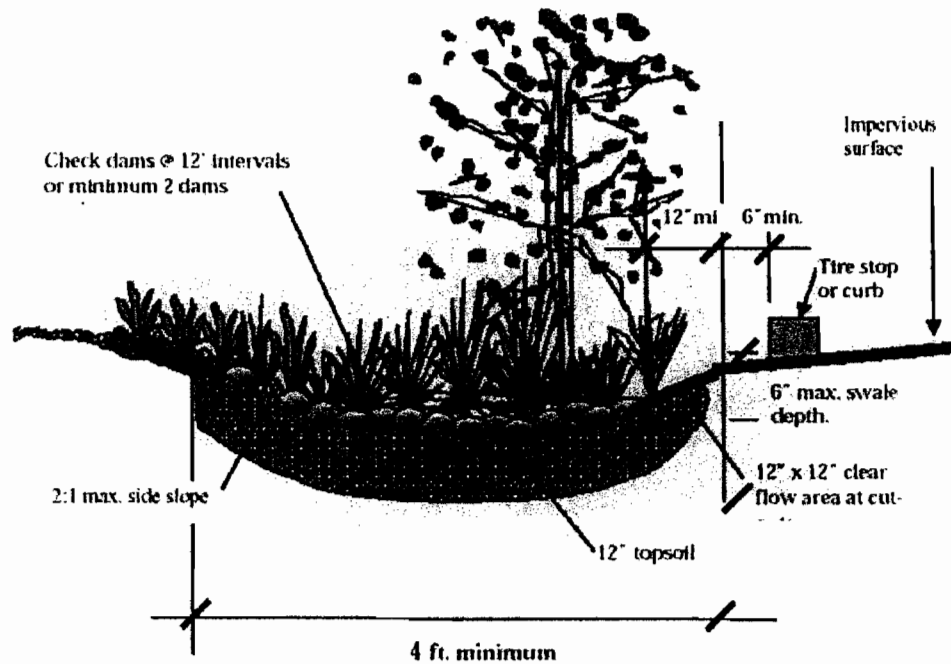






## **SECTION 4**

► **LANDSCAPE SWALE**



Minimum length: 20 feet.

Maximum slope: 6%.

Soils in the top 12" to be equivalent to a sandy loam with a minimum infiltration rate of 5 inches/hour.

Irrigation required to maintain plant viability.

Check dams should extend the width of the swale, be 12" in length along the swale, 3"-5" high and constructed of rock, old brick, concrete, or similar.

No bypass required for larger storms.

Provide liner where depth to groundwater is less than 10'. Provide underdrain system in "D" soils or where liner is required.

*Drawing courtesy City of Portland, OR.*

**RECOMMENDED PERMANENT BMP**

**LANDSCAPE SWALE**

Model* Designation		Treatment Capacity Range		Screen Diameter/Height (ft)	Sump Capacity (yd <sup>3</sup> )	Depth Below Pipe Invert (ft)	Foot Print Diameter (ft)		
		cfs	MGD						
Precast**	Inline	PMIU20_15 (Drop-in Inlet)	0.7	0.5	2.0\1.5	0.5	4.2	4.8	
		PMSU20_15_4	0.7	0.5	2.0\1.5	0.5	3.5 - 4	4.8	
		PMSU20_15	0.7	0.5	2.0\1.5	1.1	5.1	6.0	
		PMSU20_20	1.1	0.7	2.0\2.0	1.1	5.7	6.0	
		PMSU20_25	1.6	1	2.0\2.5	1.1	6.0	6.0	
		PMSU30_20	2	1.3	3.0\2.0	2.1	6.2	7.2	
		PMSU30_30	3	1.9	3.0\3.0	2.1	7.2	7.2	
		PMSU40_30	4.5	3	4.0\3.0	5.6	8.6	9.5	
		PMSU40_40	6	3.9	4.0\4.0	5.6	9.6	9.5	
	Offline	PSWC30_20	2	1.3	3.0\2.0	1.9	6.0	7.2	
		PSW30_30	3	1.9	3.0\3.0	1.8	7.0	6.0	
		PSWC30_30	3	1.9	3.0\3.0	2.1	7.0	7.2	
		PSWC40_30	4.5	3	4.0\3.0	1.9	8.5	8.3	
		PSWC40_40	6	3.9	4.0\4.0	1.9	9.6	8.3	
		PSW50_42	9	5.8	5.0\4.2	1.9	9.6	9.5	
		PSWC56_40	9	5.8	5.6\4.0	1.9	9.6	9.5	
		PSW50_50	11	7.1	5.0\5.0	1.9	10.3	9.5	
		PSWC56_53	14	9	5.6\5.3	1.9	10.9	9.5	
		PSWC56_68	19	12	5.6\6.8	1.9	12.6	9.5	
		PSWC56_78	25	16	5.6\7.8	1.9	13.6	9.5	
		PSW70_70	26	17	7.0\7.0	3.9	14	12.5	
		PSW100_60	30	19	10.0\6.0	6.9 or 14.1	12	18	
		PSW100_80	50	32	10.0\8.0	6.9 or 14.1	14		
		PSW100_100	64	41	10.0\10.0	6.9 or 14.1	16		
		Cast in Place	CSW150_134	148	95.5	15.0\13.4	14.1***	19.6***	25.5
			CSW200_164	270	174	20.0\16.4	14.1***	22.6***	34.5
			CSW240_160	300	194	24.0\16.0	14.1***	21.2***	41

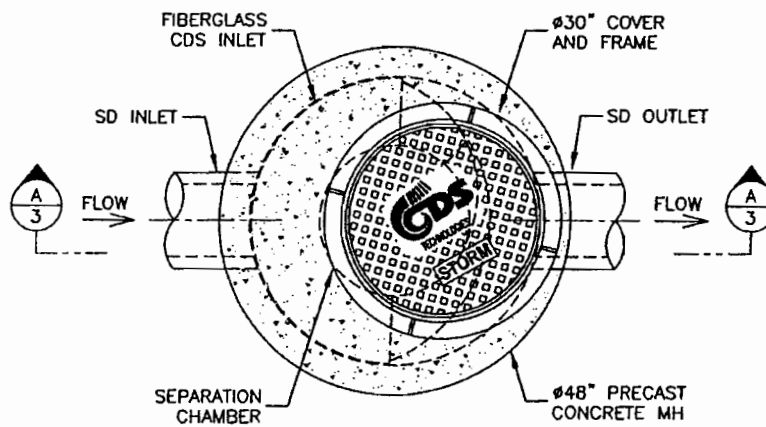
\*CDS Precast Manhole Insert Unit (PMIU), Precast Manhole Stormwater Unit (PMSU), Precast Stormwater Concentric (PSWC), Precast (P), and Cast in Place (C), Stormwater (SW)

\*\*CDS Technologies can customize units to meet specific design flows and sump capacities

\*\*\*Sump Capacities and Depth Below Pipe Invert can vary due to specific site design

**RECOMMENDED PERMANENT STRUCTURAL BMP**  
**STORMWATER TREATMENT UNIT –**  
**MANUFACTURER CAPACITY INFORMATION**

## PLAN VIEW



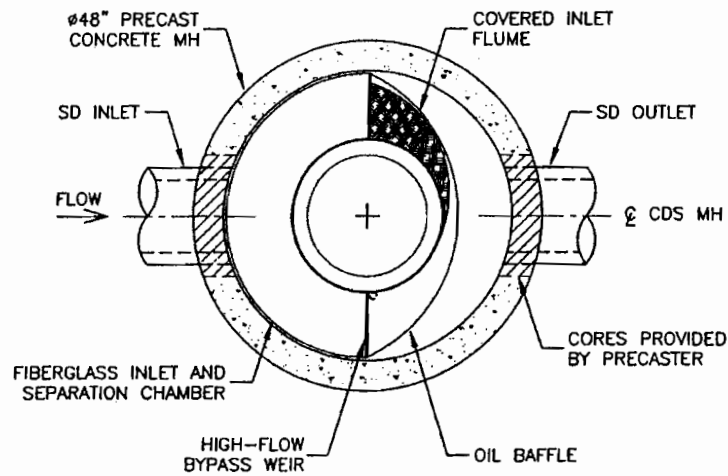
NOTE:  
CDS UNIT IS SHIPPED COMPLETE WITH FIBERGLASS INLET/OIL  
BAFFLE AND SEPARATION SCREEN ASSEMBLY PRE-INSTALLED.

**CDS MODEL PMSU20\_15\_4  
STORMWATER TREATMENT UNIT**

	<b>PROJECT NAME</b> CITY, STATE	JOB #	SCALE 1"=20'
		DATE:	SHEET
		DRAWN:	1
		APPROV.	
16360 MONTEREY RD. SUITE 250 MORGAN HILL, CA 95037    TEL: (888) 535-7559    FAX: (408) 782-0721			

**RECOMMENDED PERMANENT STRUCUTRAL BMP**  
**STORMWATER TREATMENT UNIT**

## SECTION B-B

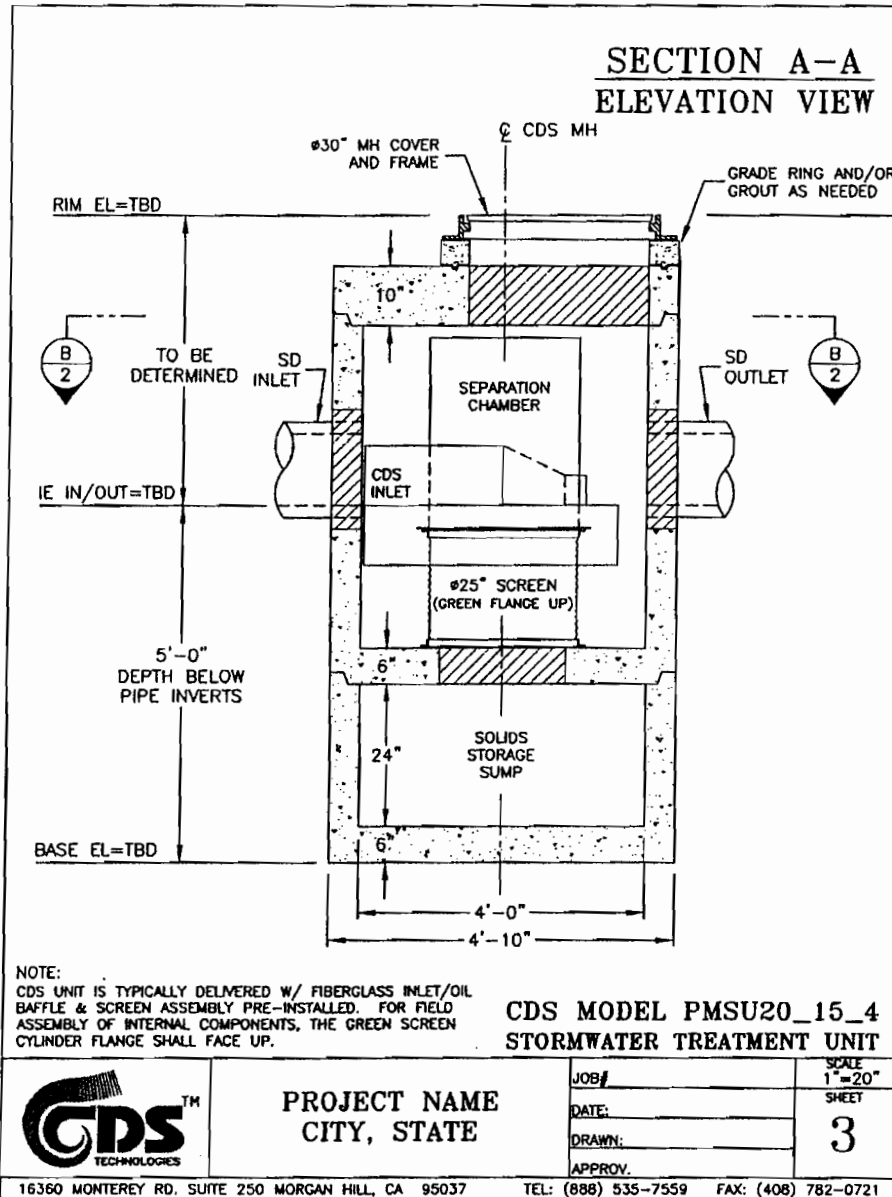


NOTE:  
CDS UNIT IS SHIPPED COMPLETE WITH FIBERGLASS INLET/OIL  
BAFFLE AND SEPARATION SCREEN ASSEMBLY PRE-INSTALLED.

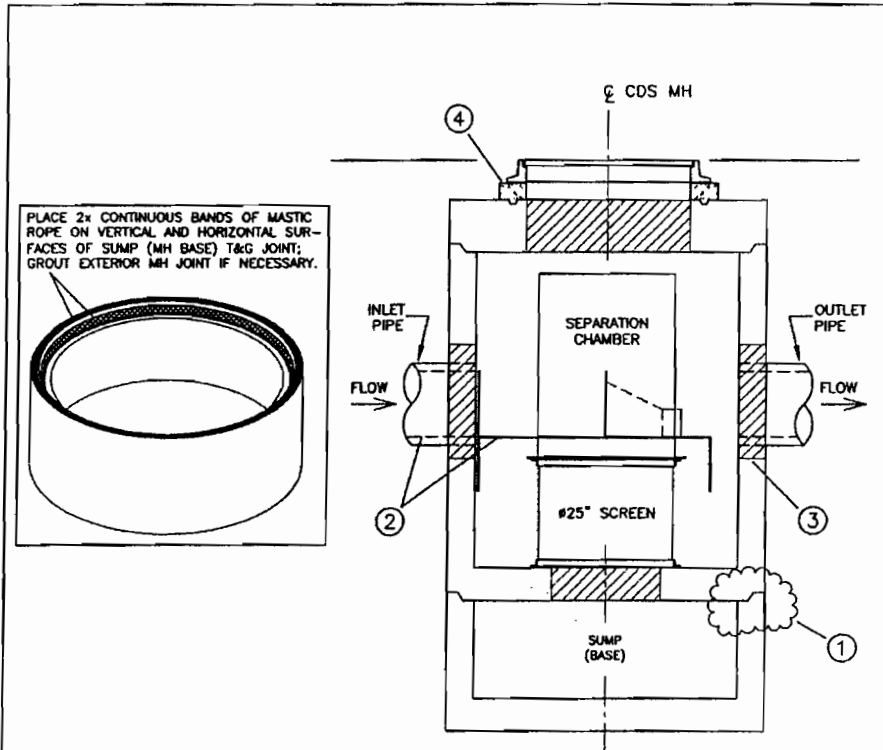
**CDS MODEL PMSU20\_15\_4  
STORMWATER TREATMENT UNIT**

	<b>PROJECT NAME</b> CITY, STATE	JOB#	SCALE 1"=20"
		DATE:	SHEET
		DRAWN:	2
		APPROV.	
16360 MONTEREY RD. SUITE 250 MORGAN HILL, CA 95037    TEL: (888) 535-7559    FAX: (408) 782-0721			

**RECOMMENDED PERMANENT STRUCUTRAL BMP**  
**STORMWATER TREATMENT UNIT**



**RECOMMENDED PERMANENT STRUCUTRAL BMP**  
**STORMWATER TREATMENT UNIT**




#### CONSTRUCTION NOTES:

1. APPLY BUTYL MASTIC TO SEAL JOINTS OF MANHOLE STRUCTURE (SEE INSET DETAIL DRAWING); APPLY GROUT TO EXTERIOR T&G JOINTS OF MH SECTIONS TO COMPLETELY SEAL IF NECESSARY (UNIT MUST BE WATER TIGHT, HOLDING WATER UP TO FLOWLINE INVERT, MINIMUM).
2. BEFORE PLACING MORE PRECAST COMPONENTS OR BACKFILLING, ENSURE FIBERGLASS INLET & (OUTLET) PIPE INLET INVERT ELEVATIONS MATCH - ADJUST IF NECESSARY.
3. PLACE GROUT OR USE FLEXIBLE CONNECTORS TO SEAL PIPE-MH CONNECTIONS.
4. USE GRADE RINGS, WALL SECTIONS, AND/OR GROUT TO MEET FINISHED-GRADE ELEVATION; SEAL AS NECESSARY.

#### GENERAL NOTES:

1. CDS UNIT COMES COMPLETE WITH FIBERGLASS INLET/OIL BAFFLE AND SCREEN ASSEMBLY PRE-INSTALLED.
2. INSTALL UNIT PER CDS INSTALLATION GUIDELINES AND ALL APPLICABLE PROJECT SPECIFICATIONS.
3. CONTRACTOR TO BE EQUIPPED TO LIFT HEAVIEST PICK SECTION (5,000# TYPICAL, 6,500# MAXIMUM).

	CDS MODEL PMSU20_15_4 MISCELLANEOUS NOTES	JOB#	SCALE
		DATE:	N.T.S.
		DRAWN:	SHEET
		APPROV.	4
16360 S. MONTEREY RD. SUITE 250 MORGAN HILL, CA. 95037 TEL: (888) 535-7559			

### **RECOMMENDED PERMANENT STRUCTURAL BMP** **STORMWATER TREATMENT UNIT**

### **Recommended BMP Maintenance**

Treatment BMPs require minimum maintenance similar to that for any landscape areas. BMPs must be regularly maintained to insure that they continue to be effective and do not cause flooding or other harmful nuisances. The maintenance requirements are:

- Irrigate landscape swales and landscape infiltration areas throughout the dry season. Irrigation will be provided with sufficient quantity and frequency to allow plants to thrive.
- Limit the use of fertilizers and/or pesticides. Mosquito larvicides should be applied only when absolutely necessary.
- Replace and amend plants and soils as necessary to insure the BMPs are effective and attractive. Plants must remain healthy and trimmed if overgrown. Soils must be maintained to efficiently filter the stormwater.
- After all major storm events, inspect storm drain inlets, drain pipes, check dams, swales and channels for obstructions and remove if necessary.
- Continue general landscape maintenance, including pruning and cleanup throughout the year.
- A BMP maintenance plan agreement shall be prepared and entered in an agreement with the City of Milpitas with the building permit process.
- Structural BMP units (CDS devices) shall be annually inspected and maintained. Any collected debris shall be removed from the unit, typically by a vacuum truck industry.



**Carlson, Barbee  
& Gibson, Inc.**

CIVIL ENGINEERS • SURVEYORS • PLANNERS

March 10, 2006  
Job No.: 1299-00

Mr. Babak Kaderi  
**CITY OF MILPITAS**  
Engineering Department  
455 E. Calaveras Blvd.  
Milpitas, CA 95035

Subject: Stormwater Control Plan Certification  
Murphy Ranch – Fairfield Residential Apartments  
APN: 086-01-041 / 086-01-042  
Milpitas, California

Dear Babak,

The selection, sizing, and preliminary design of treatment BMP's and other control measures in this plan meet the requirements of Regional Water Quality Control Board Order 01.119.

Very truly yours,

Jason J. Neri, P.E.  
Senior Engineer





**Carlson, Barbee  
& Gibson, Inc.**

CIVIL ENGINEERS • SURVEYORS • PLANNERS

Date: 3/10/2006  
Job No.: 1299-00

**Construction Plan C.3 Checklist**  
**MURPHY RANCH**

Stormwater Control Plan Page #	BMP Description	See Plan Sheet #s
Figure 7	Landscape Swale	
Figure 7	Structural BMP / Stormwater Treatment Unit (CDS unit or similar)	



Submit with  
Stormwater  
Control Plan

## City of Milpitas

## C.3 Data Form

### When Should This Form Be Completed?

Complete this form if any of the following applies:

- Project was "deemed complete" between Oct. 15, 2003 – Oct. 5, 2005 and has added or replaced an impervious surface area of 1 acre (43,500 square feet) or more.
- Project was "deemed complete" after Oct. 6, 2005 and has added or replaced an impervious surface area of 10,000 square feet or more and falls within the Group 2A categories (see below).

Note: For public roadways, include new impervious surface areas, but not replaced impervious surface areas.

### What is an Impervious Surface?

Any surface on or above ground that prevents the infiltration or passage of water into the soil. Impervious surfaces include, but are not limited to, non-absorbent rooftops, paved or covered patios, driveways, parking lots, paved walkways, compacted soil or rock, and streets. It includes streets, roads, highways, and freeways that are under the City of Milpitas' jurisdiction and any newly constructed paved surface used primarily for the transportation of automobiles, trucks, motorcycles, and other motorized vehicles. Excluded from this category are public sidewalks, bicycle lanes, trails, bridge accessories, guardrails, and landscape features.

### How To Determine the Date "Deemed Complete"

Private projects are "deemed complete" when the list of requirements needed for planning application submittals (provided by the Planning Division) is complete and ready to be processed. This list includes the Stormwater Control Plan. Public projects are "deemed complete" when City Council approves *design* funding.

### What are the Group 2A Categories?

- Gas stations;
- Auto wrecking yards;
- Loading dock areas and surface parking lots containing more than 10,000 square feet or more of impervious surface area;
- Vehicle or equipment maintenance areas (including washing and repair), outdoor handling or storage of waste or hazardous materials, outdoor manufacturing area(s), outdoor food handling or processing, outdoor animal care, outdoor horticultural activities, and various other industrial and commercial uses where potential pollutant loading cannot be satisfactorily mitigated through other post-construction source control and site design practices.

### For More Information

Contact the Planning Division at 408-586-3279.

Date: 3/10/06

APN # 0 8 6 - 0 1 - 0 4 1

Project Name: MURPHY RANCH

Project Description: 659 MULTIFAMILY UNITS

Project Location (Address): 1001 MURPHY RANCH ROAD

Applicant Info (Name, Address, Phone #): FAIRFIELD RESIDENTIAL

5510 MOREHOUSE DRIVE, SAN DIEGO CA 92121 (SUITE 200) (858) 457-2123

Contractor / Designer Info (Name, Company, Address, Phone #): CARLSON BARBEE GIBSON

6111 BOLLINGER CANYON ROAD, SUITE 100

SAN RAMON, CA 94583 (925) 866-0322

1. ☐ Public ☒ Private

2. ☒ New ☐ Redevelopment

3. Project Type (select one): ☒ Commercial/Industrial ☐ Restaurant / Retail  
☐ Mixed Use ☐ Shopping Center  
☐ Residential ☒ Streets / Roads / Highways

4. Impervious Surface Area (SF = Square Feet):

a. Entire Site Size	<u>21.73 AC.</u>	<u>SF</u>
b. EXISTING Impervious Surface Area	<u>0 AC.</u>	<u>SF</u>
c. EXISTING Impervious Surface Area to be Removed	<u>0 AC.</u>	<u>SF</u>

d. <b>NEW Impervious Surface Area to be Added or Replaced</b>	15.45 AC.	SF
e. <b>TOTAL Impervious Surface Area (b-c+d)</b>	15.45 AC.	SF
<b>50% Rule (only applies to existing developments NOT subject to stormwater treatment measures):</b>		
f. <b>Percent Impervious Surface Area in Final Design (e/a x 100%)</b>	71	%

For Significant Redevelopments (check appropriate box):

- ☐ If 50% or more, the entire project must be included in the treatment measure design.  
☐ If less than 50%, only that affected portion must be included in the treatment measure design.

g. <b>Total Land Disturbance During Construction</b> Includes clearing, grading, and excavating.	21.73	SF
---	-------	----

**5. Pesticide Reduction Measures Used (Check all that apply):**

- |   |   |
|---|---|
| <input type="checkbox"/> None - Doesn't Apply                           | <input type="checkbox"/> Environmental Measures |
| <input type="checkbox"/> Education                                      | <input type="checkbox"/> Biological Measures    |
| <input type="checkbox"/> Conditions of Approval                         | <input type="checkbox"/> Chemical Measures      |
| <input type="checkbox"/> Physical and Mechanical Horticultural Measures | <input type="checkbox"/> Other _____            |

**6. Stormwater Control Measures Used (Check the appropriate boxes that apply to the project):**

<u><b>SITE DESIGN</b></u>	<u><b>STORMWATER TREATMENT</b></u> (TO BE DETERMINED)	<u><b>SOURCE CONTROLS</b></u>
<input type="checkbox"/> Minimize land disturbance	<input type="checkbox"/> Bioretention	<input type="checkbox"/> Alternative building materials
<input type="checkbox"/> Minimize impervious surfaces	<input type="checkbox"/> Drain Insert	<input type="checkbox"/> Wash area/racks, drain to sanitary sewer
<input checked="" type="checkbox"/> Minimum-impact street design	<input type="checkbox"/> Exfiltration Trench	<input type="checkbox"/> Covered dumpster area, drain to sanitary sewer
<input checked="" type="checkbox"/> Minimum-impact driveway or parking lot design	<input type="checkbox"/> Extended Detention Basin	<input checked="" type="checkbox"/> Swimming pool/fountain drain to sanitary sewer
<input checked="" type="checkbox"/> Cluster structures/pavement	<input type="checkbox"/> Hydrodynamic Separators	<input checked="" type="checkbox"/> Beneficial landscaping (minimizes irrigation, runoff, pesticides and fertilizers; promotes treatment)
<input type="checkbox"/> Disconnect downspouts	<input type="checkbox"/> Infiltration Basin	<input checked="" type="checkbox"/> Outdoor material storage protection
<input type="checkbox"/> Alternative driveway design	<input type="checkbox"/> Infiltration Trench	<input type="checkbox"/> Covers, drains for loading docks, maintenance bays, fueling areas
<input type="checkbox"/> Microdetention in landscape	<input type="checkbox"/> Media Filter	<input checked="" type="checkbox"/> Maintenance (street sweeping, catch basin cleaning)
<input type="checkbox"/> Preserve open space: _____ sq. ft.	<input type="checkbox"/> Multiple Systems	<input type="checkbox"/> Permeable pavement
<input type="checkbox"/> Protect riparian and wetland areas, riparian buffers (setback from top of bank: _____ ft.)	<input type="checkbox"/> Planter Boxes	<input type="checkbox"/> Storm Drain Signage
<input type="checkbox"/> Minimize change in runoff hydrograph	<input type="checkbox"/> Porous Pavement	<input type="checkbox"/> Green or Blue Roofs
<input type="checkbox"/> Other: _____	<input type="checkbox"/> Retention/Irrigation	<input type="checkbox"/> Other: _____
	<input type="checkbox"/> Roof Gardens	
	<input type="checkbox"/> Underground Detention Systems	
	<input type="checkbox"/> Vegetated Buffer Strip	
	<input type="checkbox"/> Vegetated Swale	
	<input type="checkbox"/> Vortex Separator*	
	<input type="checkbox"/> Water Quality Inlet	
	<input type="checkbox"/> Wet Pond	
	<input type="checkbox"/> Wet Vault	
	<input type="checkbox"/> Wetland	
	<input type="checkbox"/> Other: _____	

<b>FOR CITY STAFF ONLY</b>	
<p style="text-align: center;"><b>PRIVATE PROJECTS</b></p> <p><b>Planning:</b>  Date Received: _____  By (Name): _____  Permit #: _____  Project #, if applicable: _____  Master Permit #, if applicable: _____</p> <p>Date Entered into Database: _____  By (Name): _____</p>	<p style="text-align: center;"><b>PUBLIC PROJECTS</b></p> <p><b>Design &amp; Construction Engineering / Special Projects:</b>  Date Received: _____  By (Name): _____  Permit #: _____  Project #, if applicable: _____  Master Permit #, if applicable: _____</p> <p>Date Entered into Database: _____  By (Name): _____</p>



**Carlson, Barbee  
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CIVIL ENGINEERS • SURVEYORS • PLANNERS

1299-00  
9-May-06

**PROPOSED PROJECT CONDITION**  
**SANITARY SEWER FLOWS**

Land Use	Dwelling Units (DU)	Area (Acres)	Average Day Flow <sup>1</sup> (GPD/unit)	Average Daily Flow (MGD)	Peak Factor (not less than 1.6)	I/I <sup>2</sup> (gpad)	Q (MGD)
Multi-Family (condos)	285	14.15	225	0.0641	1.71	1,800	0.14
Multi-Family (apts)	374	7.58	225	0.0842	1.61	1,800	0.15
<b>TOTAL</b>	<b>659</b>	<b>21.7</b>	<b>225</b>	<b>0.1483</b>	<b>1.60</b>	<b>1,800</b>	<b>0.28</b>

**Notes:**

1. Milpitas Average Daily Flow for "Multiple Family Residential".
2. I/I based on Milpitas Sanitary Sewer Drainage Basin A01.